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SCHOOL OF EDUCATION
INDIANA UNIVERSITY

Spelling Proficiency in Township Schools in Indiana

by
William H. Fox

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BULLETIN OF THE SCHOOL OF EDUCATION
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Spelling Proficiency in Township Schools in Indiana

Analysis of the Spelling Proficiency of 101,747 Pupils in Grades 2 to 8 in 7,681 Teaching Units

by

WILLIAM H. FOX

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THE present report summarizes the results of that part of the 1945 Indiana State Testing Program which concerns the township schools. A previous bulletin[1] covers substantially the same summary of results for city schools, grades 2 to 8.

Consideration is extended to Clement T. Malan, State Superintendent of Public Instruction at the time the program was carried out, and to Wilbur Young, Assistant State Superintendent of Public Instruction and Chairman of the State Testing Committee. Recognition is likewise due the State Testing Committee, consisting of Custer Baker, Superintendent of Johnson County Schools; R. H. Banks, Superintendent of Schools, Vincennes; George C. Carroll, Superintendent of Schools, Terre Haute; Ira L. Huntington, Superintendent of Jasper County Schools; Norman J. Lasher, Superintendent of Schools, Seymour; and Adrian Little, Superintendent of Huntington County Schools.

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The far-reaching scope of this study and the gathering together of such an enormous amount of data would not have been possible without the excellent cooperation of administrators and teachers in the public schools of Indiana. Grateful appreciation, therefore, is extended to each and every one of the administrators and teachers who participated in the study.

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[1] Fox, William H., and Eaton, Merrill T., *Analysis of the Spelling Proficiency of 82,833 Pupils in Grades 2 to 8 in 3,547 Teaching Units of the City Schools in Indiana*, Bulletin of the School of Education, Vol. XXII, No. 2, Indiana University, Bloomington, March, 1946, 45 pp.

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Spelling Proficiency in Township Schools in Indiana

Analysis of the Spelling Proficiency of 101,747 Pupils in Grades 2 to 8 in 7,681 Teaching Units

INTRODUCTION

THE subject of spelling has inspired countless investigations by research workers. These investigations range all the way from the compilation of word lists and frequency of use counts to rigidly controlled experiments in the development of better learning and teaching techniques. The difficulties and inconsistencies of the English language have had an impeding and disorganizing effect upon orthographical precision to the extent that the rote method of learning is apparently the only one applicable in the case of many difficult words.

In the limited length of this bulletin, space does not permit a classification and summary of all past research in ramified phases of the topic. The reader will no doubt be able to find many excellent summaries already extant in current research literature. For what reference is here made to any previous conclusions, we acknowledge our gratitude to at least one conclusive and impeccable summary of the literature.[1] The conclusions from this source have effected the methods both of transmitting and of studying the data in the present study.

The term "spelling proficiency," as it appears in the title of this bulletin, is defined as the ability of a pupil to spell correctly a comparatively short, standardized list of words, selected as being representative of the larger lists recommended for his particular level of instruction. Spelling lists studied in the modern school are made up generally with two purposes in mind: (a) to teach pupils to spell correctly those words which they are making use of in writing at the time of the learning, and (b) to teach words which will appear most frequently in their future writing as adults. Actual frequency and age studies are used to determine what words go into the lists and at what level any particular word appears. The short standardized test, then, consists usually of a random sampling of these word lists and is valid insofar as the original word lists are based upon sound research techniques.

Some objection to such standardized spelling tests is voiced by those who point out the impossibility of knowing whether the tested child has had an opportunity to learn the particular words appearing on the tests. In the present study there appears to be little need for anxiety from this type of objection. If the test words are randomly selected from standardized frequency lists, and if sufficient cases are selected to make sure of a representative sampling, then it would appear that the undesirable effects would tend to be averaged out. When used individually, these tests might not have too high validity, but when used on a state-wide basis they would appear to be quite reliable and valid. Likewise, this testing procedure should throw some light on general efficiency of instruction for the state as a whole.

[1] Horn, Ernest, "Spelling," in *Encyclopedia of Educational Research* (a publication of the American Educational Research Association), by Walter S. Monroe, editor. The Macmillan Company, New York. 1941. pp. 1166-1183.

The purpose of this investigation, then, is to analyze and appraise the tested abilities of school children in spelling; to determine to what extent factors such as number of pupils per unit, school enrollment, school organization, length of school year, and type of commission, are related to tested spelling ability; and to evaluate the effect upon spelling ability of such factors as the number of days spelling is taught each week, number of minutes in the spelling period, time of day when spelling is taught, type of spelling unit, way spelling appears in the curriculum, subject preceding the spelling lesson, use of pretests, amount of spelling checked in written work, use of progress charts, and emphasis on rules, systematic reviews, and phonetics.

It is fully realized that these are not all the factors entering into successful achievement in spelling. Such factors as the per pupil cost of instruction, the influence of handwriting, incidental learning, tested reading ability, tested intelligence, socio-economic status, sex, and other factors have been completely or almost completely ignored. As an example, there would normally appear at each grade level wide individual differences in spelling ability which might be attributed to differences in learning, in experiential background, in quality of teaching, or in all of these factors. Such is usually the rule in the investigation of any phase of achievement.

The deficiencies of the present study in lack of data on factors listed above are somewhat compensated for by the breadth and scope of the data. Whereas previous state testing projects have always been confined to cases from one or two grade levels, the state testing in spelling covered all grades, beginning with grade 2, in most of the public schools in the state, in many special, private, and Lutheran parochial schools, and in the Roman Catholic parochial schools, which participated unanimously—an estimated 275,000 students in all.

Past investigations have shown that the learning curve differs from individual to individual, from class to class, and from subject to subject. The present data are adequate to develop learning curves in spelling for retarded and accelerated groups as well as for those with normal ability. Because of the large numbers of cases, the hypothesis is probably tenable that the learning curves here developed are fairly representative of a much broader population. It might not be too radical to assume that the learning curves for other phases of achievement may somewhat parallel those for spelling, especially those for subjects involving a similar type of learning and a similar emphasis in the curriculum, and, in the case of all subjects, those parts of the curves which fall above certain maturational levels.

In order that the reader may gain some comparison between the state spelling project and other state testing projects, the following list of studies is offered:

1. *A Survey of Abilities of High School Seniors in Twenty-one Counties in Indiana (Products of Indiana High Schools)*, State of Indiana, Department of Public Instruction, Research Bulletin No. 2 Testing, Indianapolis, 1942, 46 pp.

2. *A Survey of the Language Arts Achievement of Sixth Grade Children in 18 Counties and Six Cities in Indiana (Products of Indiana Elementary Schools)*, State of Indiana, Department of Public Instruction, Research Bulletin No. 3 Testing, Indianapolis, 1942, 75 pp.

3. *An Analysis of Factors Related to the Language Arts Achievement of Sixth Grade Pupils,* State of Indiana, Department of Public Instruction, Research Bulletin No. 8, Indianapolis, 1944, 82 pp.

4. *A Survey of the Achievement in Arithmetic of 11,348 Sixth Grade Pupils in 486 Schools in Indiana,* Bulletin of the School of Education, Indiana University, Vol. XX, No. 2, Bloomington, March, 1944, 66 pp.

5. *A Survey of the Achievement in Social Studies of 10,220 Sixth Grade Pupils in 464 Schools in Indiana,* Bulletin of the School of Education, Indiana University, Vol. XX, No. 3, Bloomington, May, 1944, 68 pp.

6. *Student Power Inventories of the Indiana High School War Program,* State of Indiana, Department of Public Instruction, Research Bulletin No. 11, Indianapolis, 1944, 137 pp.

7. *An Experiment in Measurement on a County-Wide Basis—The Daviess County, Indiana, Testing Program,* State of Indiana, Department of Public Instruction, Research Bulletin No. 12, Indianapolis, 1944, 32 pp.

8. *The Huntington County Testing Program—The Complete Measurement of All the Pupils in the Huntington County Schools,* 1944, typed.

9. *The Washington, Indiana, Testing Program—An Experiment in Educational Measurement in an Average-Sized City School System,* State of Indiana, Department of Public Instruction, Research Bulletin No. 16, Indianapolis, 1945, 41 pp.

10. *Analysis of the Proficiency in Silent Reading of 15,206 Sixth Grade Pupils in 648 Schools in Indiana,* Bulletin of the School of Education, Indiana University, Vol. XXI, No. 6, Bloomington, November, 1945, 52 pp.

11. *Analysis of the Proficiency in Silent Reading of 11,424 Sophomores in 243 High Schools in Indiana,* Bulletin of the School of Education, Indiana University, Vol. XXII, No. 1, Bloomington, January, 1946, 51 pp.

PROCEDURES

Testing Procedures

In the spring of 1944, the Indiana State Testing Committee[2] met and authorized the testing of spelling in grades 2 to 12 as the principal state testing project for the school year 1944-1945. This meeting was held at the request of the State Superintendent of Public Instruction and took place in his offices. Present at the meeting, in addition to the state superintendent, the chairman of the committee, and other committee members, were the advisers on state testing from Indiana University.

After the testing of spelling was authorized, the next step was to discuss the test or tests to be used. This discussion brought out the fact that few, if any, standardized spelling tests have integrated forms covering the entire range of grades from 2 to 12. This difficulty was not considered too acute, however, for it was likewise pointed out that formal instruction in spelling is the exception after grade 8, and that it would therefore be advisable to give the upper grades the same test as that given to eighth grades, and to draw comparisons from the eighth grade norms. After due consideration of most of the available tests, the Stanford Achievement Test Spelling List: Form H[3] was selected on the bases of its wide standardization, its comparable norms

[2] For a list of the personnel of this committee, see the Acknowledgment, page iii.
[3] Published by the World Book Company, Yonkers-on-Hudson, 1943.

STANFORD ACHIEVEMENT TEST

SPELLING LIST: FORM H — FOR ALL BATTERIES

Note that second-grade pupils are given only words 1 to 40, third-grade pupils words 1 to 80, fourth-grade pupils words 11 to 60, fifth-grade pupils words 21 to 70, sixth-grade pupils words 31 to 80, seventh-grade pupils words 41 to 90, and eighth- and ninth-grade pupils 51 to 100. In the case of Grades 4, 5, 6, 7, 8, and 9, the words are to be read as though they were numbered 1 to 50. Read the number of each word and caution pupils to write the word on the line that has the number of that word.

Second and third grades start here.

1. *is*	Your coat isn't here, but your hat **is**.	*is*
2. *me*	It is mine; give it to **me**.	*me*
3. *do*	Please **do** come to my party.	*do*
4. *you*	Are you ready for school?	*you*
5. *look*	Before crossing a street, look both **ways**.	*look*
6. *way*	Which **way** did the car turn?	*way*
7. *his*	He calls **his** dog "Spot."	*his*
8. *have*	Large houses **have** many rooms.	*have*
9. *but*	It is heavy, **but** I can lift it.	*but*
10. *was*	I **was** sick yesterday.	*was*

Fourth grade starts here. (Call these words numbers 1 to 50 instead of 11 to 60.)

11. *tell*	Never **tell** a secret.	*tell*
12. *belong*	Does this kitten **belong** to you?	*belong*
13. *game*	We played a **game** called "pull-away."	*game*
14. *two*	The next number after one is **two**.	*two*
15. *deep*	The water in the ocean is very **deep**.	*deep*
16. *town*	A city is larger than a **town**.	*town*
17. *upon*	Once upon a time there were no railroads.	*upon*
18. *hard*	Wood is not so **hard** as iron.	*hard*
19. *faster*	Airplanes go **faster** than trains.	*faster*
20. *place*	I lost my **place** in the book.	*place*

Fifth grade starts here. (Call these words numbers 1 to 50 instead of 21 to 70.)

21. *standing*	Is the horse lying down or **standing** up?	*standing*
22. *add*	To find the sum of two numbers we **add**.	*add*
23. *kind*	Children should be **kind** to their pets.	*kind*
24. *river*	We crossed the **river** in a boat.	*river*
25. *our*	Please come over and play at our house.	*our*
26. *spring*	The door is held shut by a **spring**.	*spring*
27. *city*	This town is almost as large as a **city**.	*city*
28. *coal*	A little ice will cool the water.	*coal*
29. *care*	You should take good **care** of your pets.	*care*
30. *were*	They **were** here, but they are gone now.	*were*

Sixth grade starts here. (Call these words numbers 1 to 50 instead of 31 to 80.)

31. *wide*	This room is 15 feet long and 10 feet **wide**.	*wide*
32. *finger*	Put the ring on my little **finger**.	*finger*
33. *leg*	The knee is part of the **leg**.	*leg*
34. *riding*	Horseback **riding** is excellent exercise.	*riding*
35. *kisses*	There were many **kisses** as they said good-by.	*kisses*
36. *early*	Seven o'clock is **early** in the morning.	*early*
37. *paint*	Do you like to **paint** with water colors?	*paint*
38. *iron*	Stoves are made of **iron**.	*iron*
39. *washed*	Mother **washed** clothes on Monday.	*washed*
40. *catch*	Can you **catch** the ball with one hand?	*catch*

Second grade stops here.

Seventh grade starts here. (Call these words numbers 1 to 50 instead of 41 to 90.)

41. *nearer*	The moon is **nearer** to us than the sun.	*nearer*
42. *says*	The sign says, "Slow, dangerous!"	*says*
43. *learned*	Have you **learned** to skate on ice yet?	*learned*
44. *stayed*	We **stayed** in a hotel for three days.	*stayed*
45. *lately*	Where have you been **lately**?	*lately*

(Spelling List continued on reverse side)

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SPELLING LIST: FORM H — *Continued*

46. *animal*	What **animal** do you like best for a pet?	*animal*
47. *taste*	I do not like the **taste** of olives.	*taste*
48. *potatoes*	I like mashed potatoes and gravy.	*potatoes*
49. *garage*	We keep our car in a neighbor's **garage**.	*garage*
50. *quiet*	It **was** so quiet you could hear a pin drop.	*quiet*

Third grade stops here.

Eighth and ninth grades start here. (Call these words numbers 1 to 50 instead of 51 to 100.)

51. *valley*	The river **valley** lies between two hills.	*valley*
52. *settled*	The rain cooled the air and **settled** the dust.	*settled*
53. *butcher*	How much does the butcher charge for beef?	*butcher*
54. *remembering*	Are you remembering my birthday?	*remembering*
55. *result*	A broken arm was the **result** of her fall.	*result*
56. *arrived*	The train arrived at the station at 7 : 30.	*arrived*
57. *telegram*	Sending a **telegram** is usually quicker than writing a letter.	*telegram*
58. *library*	Our **library** has more than a thousand books.	*library*
59. *humor*	I see no **humor** in that joke.	*humor* (with humour)
60. *cashier*	A **cashier** handles money in a bank.	*cashier*

Fourth grade stops here.

61. *course*	The ship changed its **course** from north to **east**.	*course*
62. *accept*	I shall **accept** your invitation with pleasure.	*accept*
63. *encourage*	Praise will often **encourage** a pupil.	*encourage*
64. *desiring*	Those **desiring** to go may leave now.	*desiring*
65. *source*	Clouds are the source of rain.	*source*
66. *type*	John is not the type of boy to steal.	*type*
67. *planning*	We are **planning** a school party for Halloween.	*planning*
68. *practicing*	Helen is **practicing** on the piano.	*practicing* (with practising)
69. *talent*	His paintings show unusual **talent**.	*talent*
70. *appearance*	His sudden **appearance** frightened me.	*appearance*

Fifth grade stops here.

71. *label*	The **label** on the can says "String Beans."	*label*
72. *succeeded*	After three failures, Bobby **succeeded**.	*succeeded*
73. *acknowledge*	This note will **acknowledge** your letter.	*acknowledge*
74. *favorably*	His request was acted upon **favorably**.	*favorably*
75. *gradually*	Ice **gradually** changes into water.	*gradually*
76. *exhibit*	We saw an **exhibit** of animal pictures.	*exhibit*
77. *physical*	The doctor gave me a **physical** examination.	*physical*
78. *necessary*	Food, air, and water are **necessary** to keep us alive.	*necessary*
79. *specially*	An acrobat is **specially** strong.	*specially*
80. *preliminary*	A short talk was **preliminary** to the main address.	*preliminary*

Sixth grade stops here.

81. *administrator*	The **administrator** managed the business well.	*administrator*
82. *cordial*	His manner is agreeable and **cordial**.	*cordial*
83. *necessity*	Sunshine is a **necessity** for good health.	*necessity*
84. *immediate*	This letter requires an **immediate** reply.	*immediate*
85. *familiar*	His face is **familiar**; where did I meet him?	*familiar*
86. *acquainted*	Are you **acquainted** with the new girl yet?	*acquainted*
87. *quantities*	A locomotive burns large **quantities** of coal.	*quantities*
88. *prior*	I cannot go because I have a prior engagement.	*prior*
89. *correspondent*	We write letters to and receive letters from a **correspondent**.	*correspondent*
90. *convenient*	A kitchen table should be **convenient** to the stove and pantry.	*convenient*

Seventh grade stops here.

91. *recommendation*	Write me a letter of **recommendation** for the job.	*recommendation*
92. *congressional*	The **congressional** vote was a tie.	*congressional*
93. *achievement*	The discovery of the North Pole was a great **achievement**.	*achievement*
94. *immense*	An iceberg is an **immense** piece of ice.	*immense*
95. *analysis*	The chemist's **analysis** showed the water to be pure.	*analysis*
96. *appendicitis*	John had an **appendicitis** operation today.	*appendicitis*
97. *peculiarities*	One of the **peculiarities** of the giraffe is its long neck	*peculiarities*
98. *kindergarten*	Children under six go to **kindergarten**.	*kindergarten*
99. *tragedy*	A sudden death is always a **tragedy**.	*tragedy*
100. *accidentally*	He was **accidentally** injured by a falling brick.	*accidentally*

Eighth and ninth grades stop here.

Fig. 1. Stanford Achievement Test Spelling List: Form H

from grade to grade, and the fact that it was readily available and usable. The form selected was that which is administered orally rather than the machine-scorable edition which consists of selecting the correct spelling from a choice of spellings for each particular word. Figure 1 is a reproduction of the word lists for each grade, and also includes the directions for administering the test. It will be noted that there are 40 words in the second grade list and 50 words in the list for each of the other grades. The words are arranged in statistical order of difficulty and each list overlaps several other lists.

Two general meetings of school administrators were called in August, one at Peru for the northern section of the state, and one at Bedford for the southern section. These meetings were for the purpose of acquainting administrators with the proposed project and of getting their reactions. It is significant that no previous state testing project had created such interest and enthusiasm. All were in favor of the proposal, and a high degree of cooperation was assured. Later in the fall a complete outline of the details was presented at six regional administrators' meetings held throughout the state.

The date of testing was set for December 10, 1944, but, because of difficulties in printing and distributing the tests, this date was later changed to February 9. About the first of December a bulletin was sent out by the State Department of Public Instruction drawing attention to the date of testing and listing the answers to anticipated questions covering supplies and general administration.

In the meantime, work went forward on developing a suitable transmittal form on which to send the data to the University for processing. Figure 2 is a reproduction of this form. In addition to the usual information recorded for each pupil tested, the form also allowed for visual and audiometric ratings.

Figure 3 is a reproduction of the reverse side of the transmittal form. On this were listed the steps to be carried out in the project, and basic forms for listing information concerning the groups to be tested. The test publishers printed this transmittal form, together with a single sheet containing tables of equated scores, a grade placement chart, and norms. These materials were distributed at a very reasonable cost, with the word lists and spelling blanks, to each school on order.

The teachers of each unit were delegated the task of giving the tests, scoring the tests, and preparing the transmittal sheets. Suprintendents and principals were to supervise this part of the project, and to be responsible for seeing that the program was carried out uniformly and that the results were sent to the University.

A list of participating school systems whose data are included may be found in the appendix of this report.

Tabulation Procedure

The data began arriving at the University shortly after the date of testing and continued to come in as late as four months after this date. The processing of this mass of data took more than a year. It was begun July 1, 1945, and completed August 15, 1946. Steps in this process were as follows:

1. Each school was assigned a code number and its data were filed according to number.
2. Each item of basic information was coded by number.

REPORT FORM—STATE SPELLING TEST—1944-1945

School _____ Mailing address _____ Grade _____ Teacher _____ Principal _____

Type of school: City ☐ ; Township ☐ ; Parochial ☐ ; Other (Name) _____ Date _____ Superintendent _____

No.	Name	Sex	Date of birth Mo.	D.	Yr.	Leave blank	Write in the words used in testing → 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	Raw Score Number Right	Snellen Visual Acuity Test: Right eye	Left eye	Leave blank	Audiometric Test: Pitch test Right ear Loss	Pitch test Left ear Loss	Group test Right ear Loss	Group test Left ear Loss
S	Jane Doe	G	7	10	33		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓									46	20/40	20/20				✓	18
1																																																																												
2																		

INDIANA STATE TESTING PROGRAM—SPELLING

Steps in Carrying Out the Program

1. On the day of testing provide each test administrator with a copy of the word list, a copy of this report form, and sufficient copies of the spelling answer sheets for the class to be tested. Each of Grades II–VII should be tested separately. Grades VIII–XII are measured with the same test, and may be combined into larger units.
2. A separate report form must be executed for each room, and for each grade and half-grade. For example, VI A and VI B may be tested together, but the reports for these grades must appear on separate forms. Where a particular grade is housed in more than one room, separate reports must be executed for each room. For the larger departmentalized classes in Junior and Senior High School, use enough forms to report the entire class at each level. These may be stapled together, with basic information listed on the top form.
3. Administer the tests. *The Stanford Spelling test requires approximately 15 minutes, allowing all pupils time to write each word. The teacher pronounces the word, then reads a sentence in which it is used, then pronounces the word again (first explaining this procedure, and cautioning pupils to write each word by the right number).*
4. Score individual papers. The Spelling List may be used as a key. In scoring, capitalization is entirely disregarded; likewise undotted *i*'s or uncrossed *t*'s where it is clear that these letters are intended. Pupils should not be penalized for poor handwriting. Count number right to get Raw Score. Refer to Norm sheet, Table I to get Equated Score corresponding to that Raw Score, and Table II to get Grade Equivalent corresponding to the Equated Score.
5. Fill in the information at the top of the reverse side of this form.
6. Write in the words used in testing the pupils whose names appear on this form.
7. Before executing steps 8-14, observe the sample which appears just above the space for pupil No. 1 on the reverse side of this page.
8. Write in the name of each student.
9. List the sex for each student, using "B" for boy and "G" for girl.
10. List the birth date (month — day — year) for each student.
11. Indicate with an (×) the words misspelled and a (✓) the words spelled correctly. This is important for tabulation purposes.
12. List the spelling *Raw* Score (No. Right), not the Equated Score, for each student.
13. List visual acuity rating for the right and left eye of each pupil. If the pupil wears glasses, list the rating *with glasses*. If no ratings are available, leave this space blank.
14. Record audiometric test results as follows: Where both group test and pitch test records are available record only the *pitch* test results. In this case, average the losses in the frequencies 256, 512, 1024, and 2048 for each ear, ignoring the other frequencies. Record the average loss for each ear as indicated. If the pupil took only the group test, record as follows: (a) indicate by a (✓) if the pupil passed the test with either or both ears; (b) mark the hearing line if the pupil failed in either or both ears. The sample shows that (1) the pupil had taken only the group test, (2) the right ear was passed, (3) the hearing line showed a loss of 18 in the left ear.
15. Check the basic information asked for at the bottom of this page.
16. Place folded forms in a flat envelope and mail to: W. H. Fox
    Bureau of Cooperative Research
    Alpha Hall — Room 100
    Indiana University, Bloomington, Indiana

BASIC INFORMATION

Check each of the following items as it applies to the class reported on the reverse side of this form.

1. Spelling is taught on the following days: Mon. ☐; Tues. ☐; Wed. ☐; Thurs. ☐; Fri. ☐.
2. The average number of minutes in each period devoted to spelling is: 5 ☐; 10 ☐; 15 ☐; 20 ☐; 30 ☐; 40 ☐; more than 40 ☐.
3. The time of day in which the spelling period falls is: 8:00–10:00 ☐; 10:00–12:00 ☐; 1:00–2:30 ☐; 2:30–4:00 ☐; time varies from day to day ☐.
4. In the daily program, the subject preceding spelling is Reading ☐; other Language Arts ☐; Mathematics ☐; Social Studies ☐; Music or Art ☐; Health and Safety ☐; Science ☐; Physical Education ☐; other (*name*) ..... Spelling is first ☐; preceding subject varies ☐.
5. The pupils listed on this form have had the opportunity of participating in local ☐, county ☐, regional ☐, other ☐, no ☐ spelling contests.
6. The type of unit used in teaching spelling is daily ☐; weekly ☐; monthly ☐; semester ☐; other (*name*) .....
7. Spelling is taught as a separate subject ☐ or, in connection with Language Arts ☐; in connection with English ☐; in connection with Commercial subjects ☐; other ☐.
8. The textbook used in spelling is the State-adopted text ☐; other (*name*) .....; no text is used ☐.
9. The children are pretested to determine what words need to be stressed. Yes ☐; No ☐.
10. Spelling is checked in all ☐, some ☐, none ☐ of the written work handed in by pupils.
11. Progress charts are used in motivating the pupil in Spelling. Yes ☐; No ☐.
12. For these pupils, the teacher of spelling emphasizes no rules ☐; only general rules ☐; rules as they apply ☐; few rules ☐; many rules ☐.
13. Planned, systematic reviews are held. Yes ☐; No ☐. Some reviews are held but not systematized ☐.
14. In the primary reading program for these pupils, phonetics were heavily stressed ☐; moderately stressed ☐; stressed not at all ☐.
15. List briefly the plan followed for individual study in spelling.

    .....
    .....
    .....
    .....

16. List briefly the plan for providing for individual differences in spelling ability.

    .....
    .....
    .....
    .....

Fig. 3. Reverse side of report form for the state spelling test

3. Other available information for each school was obtained from the *Indiana School Directory* and from publications of the Indiana State Teachers Association. This information was likewise coded.

4. Each pupil's score was punched on a Hollerith card, together with school identification number, unit, and grade. Since the Hollerith card contains 80 columns, skip bars were utilized in order to tabulate the scores of 8 pupils on each card.

5. The individual scores were then tabulated by grade, school, and unit.

6. Grade equivalent limits were arbitrarily set as .4 on either side of the test norm for the grade at the date of testing. This meant, for example, that in grade 2A any grade equivalent of 2.1 to 2.9 would be considered as normal achievement since 2.5 was the norm for this grade. Any grade equivalent above this range was considered as accelerated achievement, while any grade equivalent below this range was considered as retarded. The B classes were similarly treated, except that the limits were moved down .5 grade.

7. Modal type norms were used. These norms differ from the traditional type in that they are computed for pupils who are at age for grade at the time of testing, and they therefore represent a somewhat more ideal objective of successful achievement.

8. Master sheets were constructed which contained the following: school identification number, coded basic information, coded school information, grade and unit, and number of pupils, total score, mean score, and grade equivalent of the mean, for retarded, accelerated normal, and total pupils tested.

9. The data on these master sheets were then punched on Hollerith cards, and from these cards the study was made.

In this study primary emphasis was placed on the administrative groups and units rather than upon the school or the city as a whole. The smaller unit and gross totals remain the primary objective of this study.

It is well recognized that this report only scratches the surface in exhausting the possibilities for studying the data. Therefore, it is planned to continue the study of these data for several years to come. Subsequent reports will be made in journals and periodicals, since they will incorporate research which is of interest to education in general.

FINDINGS

Two approaches were used in attempting the study of data concerning grades 2 to 8 in township schools. It was desirable, first, to make an observation of spelling progress from grade to grade, and, second, to study the relationship between other measurable items of school data and measured spelling proficiency.

Results by Separate Grades

Table I shows the number of units reported, number of cases, per cent of grade, mean score, mean grade equivalent, and average deviation for each grade and for classifications of retarded, normal, and accelerated students in tested spelling ability. The incidence of cases in B grades at the time of testing, that is 2B, 3B, etc., was so small that it was considered unnecessary to include separately such B classes in the table. In every case, however, the number of units, number of cases, and per cent of grade given in the table include the B classes, but the listed mean score, mean grade equivalent, and average student deviation were computed for the large A classes only.

Grade 2.—A total of 1,138 units of second graders were reported in the study. Of these, 986 units reported some retarded students while 152 units had no retarded students. In grade 2 there were 5,413 reported cases of retardation in tested spelling ability, which constituted 36 per cent of all the cases reported on that level. The mean score of 7.0 for retarded second graders gave a grade equivalent of 1.7, or .8 grade below the norm.

Even at the second grade level, 113 of the units tested, or about 1 in 10, reported no normal cases. A total of 6,413 normal cases made up 42 per cent of all the second grade cases. Despite the fact that normal cases were limited to those who rated in the range .4 grade above and below the test norm at the time of testing, these normal cases on the second grade level distributed themselves in such a manner that their average pupil deviation was −.1 grade.

About 22 per cent of the second graders showed tested spelling ability above the normal criterion. There were 316 units which had no accelerated cases, as opposed to 822 units which had some accelerated students. The mean grade equivalent for the accelerated second graders gave an average student deviation of +.8 grade.

More than 15,000 second graders were reported in all, or about 15 per cent of the total cases in grades 2 to 8. The average size of the unit was 13 and the average grade equivalent 2.3.

Thus, second graders in Indiana township schools would appear, on the average, to be .2 grade retarded in measured spelling ability, if the cases in this study may be considered to report a typical sampling.

Grade 3.—There were 1,152 units reported at the third grade level. Of these, 997 reported some retarded students, while 155 had no retarded cases. The total number of retarded cases represented 36 per cent of the third graders reported. These cases had a mean grade equivalent of 2.5, one whole grade below the norm.

About 34 per cent of the third graders were normal in tested spelling ability, and approximately 1 unit in 9 reported no normal cases. There was again a tendency toward positive skewness in the distribution of normal cases, since the average deviation was −.1 grade.

About 30 per cent of the third graders were accelerated in spelling. The distribution of accelerated cases shows that 972 units had some accelerated cases, while 180 units had no accelerated cases. On the average the accelerated cases at the third grade level were .9 grade above the norm.

Over 15,000 cases were reported from the third grade, which made up 15 per cent of the total number of cases in grades 2 to 8. The average size of the unit was 13. The mean grade equivalent for third graders was 3.3, which was .2 grade below the norm.

Grade 4.—There were 1,112 units reported in the fourth grade. Of these, 995 units had some retarded cases, while 117 reported no cases of retardation. Retarded cases made up about 39 per cent of the whole grade, and were on the average 1.1 grades below the norm.

Normal cases at the fourth grade level constituted about 34 per cent of the grade. About 1 unit in 9 reported no normal cases.

More than 5 out of 6 fourth grade units had some accelerated cases. Approximately 27 per cent of the pupils were accelerated, and these accelerated cases, on the average, were 1.3 grades above the norm.

TABLE I. NUMBER OF UNITS REPORTED FOR EACH GRADE, NUMBER OF CASES, PER CENT OF GRADE, MEAN SCORE, MEAN GRADE EQUIVALENT, AND AVERAGE PUPIL DEVIATION FOR THOSE CLASSIFIED AS RETARDED, NORMAL, OR ACCELERATED IN TESTED SPELLING ABILITY

Grade	Retarded							Normal							Accelerated							Total						
	Number of units	Number of units reporting no cases	Number of cases	Per cent of grade	Mean score*	Mean grade equivalent*	Average pupil deviation*	Number of units	Number of units reporting no cases	Number of cases	Per cent of grade	Mean score*	Mean grade equivalent*	Average pupil deviation*	Number of units	Number of units reporting no cases	Number of cases	Per cent of grade	Mean score*	Mean grade equivalent*	Average pupil deviation*	Number of units	Average size of unit	Number of cases	Per cent of total cases	Mean score*	Mean grade equivalent*	Average pupil deviation*
2	986	152	5,413	36	7.0	1.7	- .8	1,025	113	6,413	42	18.5	2.4	- .1	822	316	3,410	22	31.5	3.3	+ .8	1,138	13	15,856	15	17.3	2.3	- .2
3	997	155	5,520	36	19.6	2.5	-1.0	1,021	131	5,169	34	33.5	3.4	- .1	972	180	4,513	30	44.3	4.4	+ .9	1,152	13	15,202	15	31.0	3.3	- .2
4	995	117	5,698	39	19.5	3.4	-1.1	989	123	5,006	34	33.8	4.5	0	943	169	4,064	27	42.9	5.8	+1.3	1,112	13	14,768	15	30.1	4.2	- .3
5	1,077	51	8,086	55	21.1	4.2	-1.3	918	216	2,933	20	35.5	5.4	- .1	911	217	3,590	25	42.8	7.0	+1.5	1,128	13	14,609	14	29.3	4.8	- .7
6	1,045	58	7,360	52	20.2	4.9	-1.6	873	230	2,777	20	34.4	6.4	- .1	936	165	4,033	28	42.7	8.8	+2.3	1,103	13	14,170	14	29.4	5.6	- .9
7	961	78	7,094	49	17.6	5.5	-2.0	805	234	2,494	18	32.5	7.4	- .1	944	95	4,789	33	41.8	9.8	+2.3	1,039	14	14,377	14	28.2	6.6	- .9
8	956	53	7,298	55	18.2	6.2	-2.3	786	223	2,305	17	33.5	8.3	- .2	875	134	3,782	28	41.7	10.3	+1.8	1,009	13	13,385	13	27.5	7.4	-1.1
TOTAL	7,017	664	46,469	46			-1.5	6,411	1,270	27,097	26			- .1	6,405	1,276	28,181	28			+1.6	7,681	13	101,747	100			- .6

*Includes only the A sections of each grade.

Nearly 15,000 cases in all were reported at the fourth grade level. The average size of the unit was 13, and the mean grade equivalent was 4.2, which was .3 grade under the norm.

Grade 5.—There were 1,128 units of fifth graders reported in the study. Only about 1 unit in 20 reported no retarded students. The percentage of retardation at this level was 55, with the cases averaging 1.3 grades below the norm.

Only about 1 in 5 fifth graders were normal in tested spelling ability. Nearly 1 unit in 5 had no normal cases.

About 25 per cent of the fifth graders were accelerated. The average student deviation was +1.5.

Of all the students reported in grades 2 to 8, approximately 14 per cent were fifth graders. As a group, these fifth graders had a mean grade equivalent of 4.8, which was .7 grade below the norm.

Grade 6.—There were 1,103 units of sixth graders reported. Nearly 19 out of 20 of these units reported some retarded cases. In all, 52 per cent of the whole grade were retarded in spelling ability, and these cases averaged 1.6 grades below the norm.

Only 1 in 5 of the sixth graders were normal in tested spelling ability, and nearly 1 in 5 of the units reported had no normal students.

There were 165 units, or 15 per cent, which reported no accelerated cases. About 28 per cent of the sixth graders were accelerated in spelling ability as measured by this test, their average acceleration being 2.3 grades above the norm.

Sixth grade cases constituted about 14 per cent of all the cases reported in grades 2 to 8. Taken as a whole, the sixth graders averaged almost a whole grade below the norm.

Grade 7.—At the seventh grade level, 961 units reported some retarded cases, while 78 units had no retarded cases. Retarded cases constituted 49 per cent of the grade as a whole, these cases averaging 2 whole grades below the norm.

Only 17 in 100 seventh graders were normal in tested spelling ability. More than 1 unit in 5 had no normal cases.

About 33 per cent of the seventh graders were accelerated in tested spelling ability. Only about 1 unit in 10 had no accelerated cases. On the average, the accelerated students were 2.3 grades above the norm.

About 14 per cent of all the cases in grades 2 to 8 were listed as seventh graders. The mean grade equivalent of all seventh graders of 6.6 showed that the average position of the students was .9 grade below the norm.

Grade 8.—There were 1,009 units reported at the eighth grade level, only about 1 in 19 units of which reported no retarded cases. The percentage of retardation at this level was 55 and the average retarded student was 2.3 grades below the norm.

Only 17 per cent of the eighth graders were normal in spelling ability. The average student deviation showed a marked tendency toward positive skewness even for these normal cases. More than 1 unit in 5 had no normal cases.

About 28 per cent of the eighth graders were accelerated in spelling ability. Of the total units reported at this level, 134 had no accelerated

cases, while 875 units reported some acceleration. On the average, the accelerated eighth graders were 1.8 grades above the norm.

The total number of cases at the eighth grade level constituted approximately 13 per cent of all cases reported in grades 2 to 8. The average size of the unit reported at this level was 13. The mean grade equivalent was 7.4, which indicated that the eighth graders tested averaged about 1.1 grades below the norm.

B sections data.—At the time of testing (February 9th) the students in A sections outnumbered the students in B sections by about 79 to 1. Due to this fact, most generalizations concerning the A groups of students may be considered to represent the total situation, since the small number of B groups had no appreciable effect on the total. Table I, which has served as the basis of the above discussion, included both A and B sections under the headings: *number of units, number of units reporting no cases, number of cases,* and *per cent of grade.*

Table II shows the per cent of grade and the average student deviation for students of the B groups who were retarded, normal, and accelerated. The number of students in B sections ranged from 145 in grade 3B to 239 in grade 7B. Average student deviations ranged from +.1 grade in grade 2B to −.8 grade in grade 6B. The total of 1,304 students in B sections had an average student deviation of −.4 grade, which was .2 grade better than the results for the A sections. Of these 1,304 students, 47 per cent were retarded in tested spelling ability, but their average student deviation was −1.3 as compared to −1.5 for students in the A sections. About 28 per cent of the B students were normal, compared to 26 per cent of all students. About 25 per cent of the B students were accelerated, compared to 28 per cent of all students. The average pupil deviation for accelerated B students was +1.7, compared to +1.6 for the A students. Although there were minor discrepancies to be noted in comparable items of data for A and B sections, in general the trends were about the same.

Summary.—In all, 101,747 township school students in grades 2 to 8 were tested and reported. These came from 7,681 units, which averaged about 13 pupils to the unit.

The lowest incidence of retardation for all students was 36 per cent in both grades 2A and 3A; and, for the B groups alone, 20 per cent in grade 2B. The highest incidence of retardation for all students was 55 per cent in both grades 5A and 8A; and, for the B groups alone, 62 per cent in grade 6B. In all, 46 per cent of all students and 47 per cent of the B students alone were retarded. There appears to be a definite point of rapid increase in retardation for both A and B students at the fifth grade level. In all, 46,469 retarded cases in tested spelling ability were reported; 7,017 of the 7,681 units had some retarded cases, with the amount of retardation averaging about 1.5 grades below the norm.

Percentages of normal students ranged for all students from a high of 42 in grade 2A to a low of 17 in grade 8A; for the B students alone, from a high of 60 in grade 2B to a low of 11 in grade 8B. For all students these percentages showed a rather marked decrease throughout the grade range. This same condition, but not quite so consistent, was noted for the B groups alone. Only 27,097, or about 26 per cent of all students reported, were normal in tested spelling ability. A rather unusual disclosure rested in

TABLE II. PER CENT OF GRADE AND AVERAGE PUPIL DEVIATION FOR STUDENTS OF THE B GROUPS WHO WERE RETARDED, NORMAL, AND ACCELERATED

Grade	Retarded		Normal		Accelerated		Total	
	Per cent of grade	Average pupil deviation	Per cent of grade	Average pupil deviation	Per cent of grade	Average pupil deviation	Total	Average pupil deviation
2B	20	− .7	60	0	20	+1.0	172	+ .1
3B	49	−1.0	60	0	17	+1.1	145	− .4
4B	43	−1.0	36	0	22	+1.0	162	− .3
5B	58	−1.1	28	− .1	14	+1.2	218	− .6
6B	62	−1.4	19	+ .1	19	+1.8	174	− .8
7B	45	−1.6	17	0	38	+2.3	239	− .4
8B	51	−1.9	11	+ .1	38	+1.8	194	− .6
Total	47	−1.3	28	0	25	+1.7	1,304	− .4

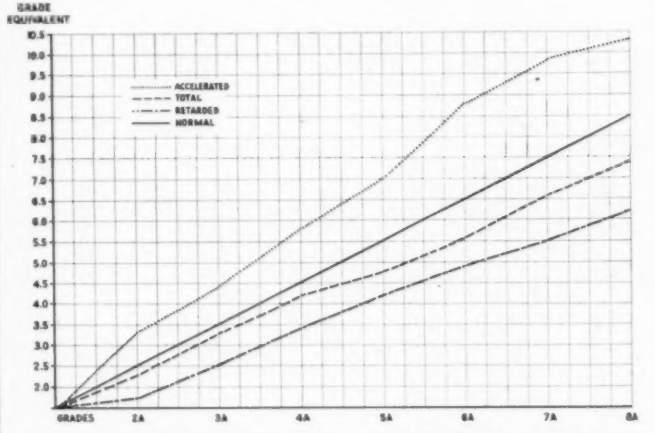
the fact that 1,270 of the original 7,681 units had no normal students.

For all students, percentages of acceleration ranged from 22 in grade 2A to 33 in grade 7A. Aside from these two extremes, the accelerated percentages did not deviate radically. No such consistency was noted for the B groups alone, where percentages of accelerated students ranged from 14 in 5B to 38 in both grades 7B and 8B. In all, 28,181 of the original 101,747 cases, or about 28 per cent, were accelerated. About 1 in 6 of the units showed no accelerated students. On the average, accelerated students were a little more than 1.5 grades above the norm.

Average student deviations for the retarded cases from both A and B grades showed a steady consistency in increasing from grade 2 to grade 8, the rate of increase being slightly higher for A students than for B students. Both grades 2B and 2A showed an average student deviation of .7 for retarded groups. For the A students there was a constant increase in average student deviation of accelerated students from grade 2A to grade 7A; grade 8A showed a decline of about .5 grade from grade 7A. For the B students, grades 2B through 5B showed very little change in average pupil deviation of accelerated students. In the seventh and eighth grades, the average pupil deviation was the same for the B students as for the A students. The average student deviations for the total A groups ranged from −.2 grade in grades 2A and 3A to −1.1 grades in grade 8A. In general, the B groups showed less subnormal tendencies than the A groups in this respect, although the trend was by no means consistent.

Figure 4 is a graphic picture of the progress in spelling achievement of retarded, accelerated, and total cases in the A groups. It was not considered necessary to draw a progress graph for the B groups, since the number of cases in B groups was insignificantly small in comparison to those in the A groups. The curves in Figure 4 were plotted to points determined by the average student deviation for each class at the time of testing. The solid line in the graph represents normal expectation as de-

termined by the test norm at each level. If it is reasonable to assume that the same learning factors have been operative for all of the cases in these classes and that the sampling at each level is truly adequate and representative, then these curves represent in effect the learning curves for accelerated, retarded, and total township students in the A grades.



Progress in Spelling Achievement of Retarded, Accelerated, and Total Cases in the A Classes

FIG. 4

Here is graphically illustrated the fact that wide differences are observable, even at the 2A level, between the averages for retarded and accelerated units, and that these differences more or less gradually increased, reaching the widest point at the 7A level. In actual figures, the differences in averages for the retarded and accelerated groups ranged from 1.6 grades at the 2A level to 4.3 grades at the 7A level, and were only slightly less at the 8A level.

The curve for normal cases shows a rather consistent deviation from the normal line up to and including grade 4A; there is a rather sharp deflection of this line towards subnormal at the 5A level, after which the line levels off but continues to drop away from the normal line. The curve for retarded cases starts out considerably below the normal line. Although this curve is not a straight line, there is a consistent tendency to pull farther away from the normal progress line. Until grade 5A is reached, the curve for accelerated students is almost a straight line, proceeding gradually away from the normal line in a positive direction. At the grade 5A level there is a sharply accelerated upward surge of the curve, after which it practically levels off but continues to pull away from the normal line. The practice here of starting all curves at the second grade level and breaking off all curves at the eighth grade level may be somewhat misleading. If the measurement had extended downward to the first grade level and upward through the high school level, curves for both accelerated and retarded

cases might have closely paralleled the typical concave-convex curve which is so prevalent in learning experiments. Data from the testing at the high school level, which is to be considered in a future study, may throw some light on this hypothesis.

A generalization concerning the spelling progress of the state, made upon the basis of the present data, requires acceptance of at least two basic assumptions: (a) That the number and distribution of cases in this study are truly representative of the population as a whole, and (b) that the test used in this study is a valid measurement of spelling proficiency. If both of these assumptions are tenable, then the spelling picture for grades 2 to 8 in the public schools of Indiana is not too bright.

These data do not in any way throw light upon the causes of the situation. Many factors might be operative to produce the type of picture represented in these data. It might be suggested that a practice of holding grade progress constant, regardless of the ability and achievement of students, would be an important item of explanation. Thus, if both retardation and acceleration in grade progress in Indiana is the exception rather than the rule, one would expect to get distributions of tested ability closely paralleling the present report. But it also appears likely that, even considering the above-mentioned condition as a factor, the average achievement in spelling of grade students in Indiana is not up to par. Whether or not this condition is one for immediate concern for public school administrators and teachers is a question which cannot be answered by the present investigator, but must be considered by the school people themselves. In view of all these possibilities and hypotheses, it seems that these data point out the existence of a real need for further investigation and experimentation. In this respect the present study surely will have fulfilled its primary purpose, and the enormous amount of time and effort expended will not have been wasted, providing such continued studies are initiated.

Results in Relation to General Factors

Many factors other than general ability enter into spelling achievement. This section of the study will consider such general factors in the school situation as number of students per unit, size of the school, organization of grades within a school, length of the school year, and type of school commission.

The percentage method of making comparisons will be employed throughout the remainder of this study. No systematic attempt has been made to check the reliability of differences which are observable in the items appearing in the ensuing tables. Numbers are sufficiently large to permit rather broad generalizations in this respect. Except in the case of a few categories showing an unusually small number of cases, any observable differences in percentages of 2 points or more may generally be considered statistically significant. However, the present investigator is fully aware of the fact that, whereas large numbers of cases such as appear in this study may give statistically reliable differences, the actual differences may not be of magnitude sufficient to make them important. The determination of the importance of many of the observable differences will rest rather arbitrarily with those who read this report.

Number of pupils per unit.—The greatest number of students, 35 per cent of the total cases, came from units having 10 to 19 pupils. If percentages

TABLE III. RETARDED, NORMAL, AND ACCELERATED PUPILS IN TESTED SPELLING ABILITY, CLASSIFIED ACCORDING TO GENERAL FACTORS IN THE SCHOOL SITUATION

Item	Units reporting		Retarded		Normal		Accelerated		Total	
	Number	Per cent of all units	Number	Per cent of category	Number	Per cent of category	Number	Per cent of category	Number	Per cent of total cases
NUMBER OF PUPILS PER UNIT										
1 - 9	3,336	45	7,840	45	4,377	26	4,949	29	16,706	16
10 - 19	2,579	34	15,824	44	9,888	27	10,348	29	35,860	35
20 - 29	1,091	14	12,129	47	6,709	26	6,941	27	25,779	26
30 - 39	522	7	8,198	47	4,821	27	4,546	26	17,565	17
40 or more	133	2	2,778	48	1,902	26	1,497	26	5,777	6
TOTAL NUMBER OF PUPILS ENROLLED										
1 - 49	2,197	28	4,219	46	2,342	26	2,515	28	9,076	9
50 - 99	1,884	24	7,812	44	4,747	27	5,071	29	17,630	17
100 - 149	1,494	19	10,061	44	6,087	27	6,506	29	22,654	23
150 - 199	960	12	8,171	46	4,608	26	4,920	28	17,691	17
200 - 299	705	9	6,579	46	3,056	27	3,070	27	18,705	18
300 - 449	313	4	4,035	45	2,471	27	2,484	28	8,990	9
450 - 599	117	2	1,699	49	955	28	780	23	3,432	3
600 and up	102	1	1,636	54	704	23	779	25	3,401	3
Data not reported	31	1	105	50	46	22	56	27	208	--
ORGANIZATION OF GRADES WITHIN THE SCHOOL										
Grades 1 - 6	2,588	34	21,388	46	12,736	27	13,142	28	47,266	46
Grades 1 - 8	4,853	63	25,018	46	15,480	28	14,253	26	51,779	51
All others	240	3	1,269	47	679	25	756	28	2,704	3
LENGTH OF SCHOOL YEAR										
8 months	6,822	88	37,040	46	21,100	26	22,436	28	80,576	79
8½ months	286	3	2,068	46	1,279	28	1,147	26	4,495	4
9 months	592	11	7,256	44	4,663	28	4,580	28	16,499	16
Data not reported	31	--	105	54	55	28	48	25	208	--
TYPE OF SCHOOL COMMISSION										
Conditional	4,047	53	16,475	47	9,330	26	9,676	27	35,481	35
Continuous	3,348	44	27,796	45	16,548	27	17,513	28	61,751	60
First class	173	2	1,709	46	1,021	27	1,010	27	3,740	4
Unclassified	113	1	389	51	199	26	182	23	770	1
TOTAL	7,681	100	46,469	46	27,097	26	28,181	28	101,747	100

of retarded students may be used as a criterion, the best spelling achievement appears to be associated with the smaller unit of students. As far as normal students were concerned, the size of unit appeared to have very little influence. The smaller units showed the highest percentage of accelerated students. In all cases, however, the differences, while appearing statistically reliable, would probably not be considered wide enough to be of much importance.

Total number of pupils enrolled.—The larger schools presented a picture in which differences with other size classifications appeared to be not only statistically reliable but also important. In the enrollment classification 450-599, there appeared to be 49 per cent retardation. This classification gave percentages of normal students in tested spelling ability which did not deviate radically from those of smaller classifications. In schools with an enrollment of 600 and up, there appeared to be 54 per cent retardation and only 23 per cent normality. Both of these larger size school classifications showed 23 per cent acceleration, which was considerably below the percentage of acceleration displayed by any of the smaller classifications. Thus, there appears to be some evidence to support a theory that better spelling achievement as determined by tests is associated with the smaller type school.

Organization of grades within the school.—Most of the township schools reported in this study were organized on a grade 1-6 or 1-8 plan, and these two organization types accounted for 46 per cent and 51 per cent, respectively, of the total cases. For both of the above mentioned types of organization, and for all other types of organization, the percentage of accelerated pupils was the same. The 1-8 organization showed 1 more

percentage point of retarded students and 1 less percentage point of normal students than did the 1-6 plan. None of the differences in percentages would appear to be important.

Length of school year.—By far the majority of township schools had an 8-month school year. Students from the 8-month schools comprised 85 per cent of the units and 79 per cent of the total cases. Only 3 per cent of the units and 4 per cent of the cases came from schools having an 8½-month year. About 11 per cent of the units and 16 per cent of the cases were in 9-month schools. Students in the 8-month schools paralleled all students in percentages of retarded, normal, and accelerated cases. Those in the 8½-month schools showed the same amount of retardation as did all students, but had 2 per cent more normal students, and 2 per cent fewer accelerated students. The 9-month schools presented a slightly more favorable picture, since there were only 44 per cent in the retarded category, 28 per cent in the normal category, and 28 per cent in the accelerated category. All in all, there appears to be very little difference in tested spelling achievement which can be said to be associated with the length of the school year.

Type of school commission.—Nearly two thirds of the township cases came from schools holding the continuous commission, while slightly more than one third were from schools holding the conditional commission. However, more than one half the units were reported from schools holding the conditional commission. Cases from schools holding the continuous commission were somewhat superior to those from other types on the basis of percentage of retarded cases, followed in order by those from schools holding first class commissions, from those holding conditional commissions, and finally, from those holding unclassified commissions. There was not enough difference in percentages of retarded, normal, and accelerated students coming from schools holding conditional, continuous, and first-class commissions to warrant any generalization concerning superiority in tested spelling ability. However, the unclassified schools appeared to be inferior to those coming from any of the other types of schools.

Summary.—In general, evidences of either inferiority or superiority in tested spelling were not closely related to such general factors as number of students per unit, number of students enrolled, organization of grades, length of school year, or type of commission held by the school. Considering all of these factors, the only place where superiority in tested spelling ability appears is in the case of units of fewer than 20 students versus units of more than that number. On the opposite side of the picture, inferiority in tested spelling ability appears when students are enrolled in schools where the enrollment is 450 or more compared with other sized schools, and in schools listed with unclassified commissions over those listed with other types of commissions.

Results in Relation to Specific Factors in Administrational Procedure

Specific factors in administrational procedure included the number of days per week spelling was taught, the length of the spelling period in minutes, the time of day spelling was taught, the type of spelling unit, the way spelling appeared in the curriculum, and the school subject preceding spelling. Information on these items of data was reported by the teachers on the special transmittal sheet used to report the test results. Table IV

TABLE IV. RETARDED, NORMAL, AND ACCELERATED PUPILS IN TESTED SPELLING ABILITY, CLASSIFIED ACCORDING TO SPECIFIC FACTORS IN ADMINISTRATIONAL PROCEDURE

Item	Units reporting		Retarded		Normal		Accelerated		Total	
	Number	Per cent of all units	Number	Per cent of category	Number	Per cent of category	Number	Per cent of category	Number	Per cent of total cases
NUMBER OF DAYS EACH WEEK SPELLING IS TAUGHT										
1	207	3	1,739	55	551	17	877	28	3,167	3
2	638	9	3,256	53	1,166	19	1,741	28	6,163	6
3	1,593	21	9,088	50	3,799	21	5,118	29	17,989	18
4	367	7	2,838	45	1,889	26	1,970	29	6,372	6
5	4,087	53	26,345	42	18,204	30	16,316	28	60,865	59
Data not reported	369	7	4,063	58	1,718	22	2,040	26	7,841	8
LENGTH OF SPELLING PERIOD IN MINUTES										
5	191	3	385	42	225	25	306	33	916	1
10	881	11	2,748	47	1,491	25	1,819	28	5,958	6
15	2,098	27	10,715	46	6,363	27	6,692	28	23,771	23
20	2,068	27	14,529	44	9,380	29	9,114	28	33,002	33
30	1,172	15	9,306	46	5,612	27	5,844	27	20,462	20
40	365	5	2,681	46	1,340	23	1,808	31	5,829	5
More than 40	261	3	1,659	48	778	21	1,040	31	3,438	3
Data not reported	685	9	4,803	51	1,979	22	2,358	27	8,834	9
TIME OF DAY SPELLING IS TAUGHT										
8:00 - 10:00	1,261	16	8,639	45	4,846	28	5,490	29	18,975	19
10:00 - 12:00	1,503	20	10,250	43	6,897	28	6,199	27	23,736	23
1:00 - 2:30	1,637	21	10,584	45	6,648	28	6,525	27	23,756	23
2:30 - 4:00	2,148	28	10,498	46	6,049	26	6,415	28	22,962	23
Time varies	616	8	4,162	51	1,820	23	2,145	26	8,127	8
Data not reported	516	7	2,336	45	1,448	28	1,407	27	5,192	5
TYPE OF SPELLING UNIT										
Daily	1,865	24	9,853	42	6,536	29	6,575	29	22,964	22
Weekly	4,434	58	28,467	46	16,292	27	16,863	27	61,622	61
Other	244	3	1,323	49	630	23	748	28	2,701	3
Data not reported	1,138	15	7,106	49	3,649	25	3,996	27	14,750	14
WAY SPELLING APPEARS IN THE CURRICULUM										
As separate subject	6,360	83	34,511	44	22,755	29	22,782	28	80,048	81
With language arts	318	4	2,180	46	1,194	25	1,346	29	4,720	4
With English	346	4	3,352	55	1,116	19	1,632	27	6,100	6
With other subjects	56	1	338	44	232	30	197	26	767	1
Data not reported	601	8	4,088	50	1,800	22	2,224	28	8,112	8
SUBJECT PRECEDING SPELLING LESSON										
Reading	1,323	17	7,998	43	5,785	31	4,959	26	18,742	18
Other language arts	1,474	19	7,248	45	4,606	28	4,764	29	16,618	16
Mathematics	946	13	5,691	45	3,527	28	3,422	27	12,650	13
Social studies	873	11	5,895	50	2,507	22	3,177	28	11,389	11
Other subjects	548	7	3,801	46	2,185	26	2,468	29	8,804	8
None--spelling first	870	11	5,717	45	3,387	26	3,816	29	12,890	13
Subject varies	870	11	4,548	47	2,484	25	2,706	28	9,797	10
Data not reported	791	10	5,713	50	2,636	23	3,070	27	11,417	11
TOTAL	7,881	100	46,469	46	27,097	26	28,182	28	101,747	100

shows the results for retarded, normal, and accelerated students in tested spelling ability, classified according to the specific factors mentioned above.

Number of days per week spelling is taught.—About 59 per cent of the total cases were reported as having spelling 5 days a week. The largest percentage having spelling less than 5 days a week was reported as having it 3 days a week. Examination of the percentages of retarded pupils in tested spelling ability showed a rather decided advantage for those studying spelling 5 days a week. This percentage of 42 was 3 percentage points less than that for pupils having spelling 4 days a week, 8 percentage points better than that for those having spelling 3 days a week, 11 per cent better than that for those having spelling 2 days a week, and 13 per cent better than that for those having spelling only 1 day a week. In fact, as far as retarded percentages are concerned, there was an inverse relationship between the size of these percentages and the number of days spelling was taught each week, which would seem to indicate that better spelling achievement was somewhat proportional to the number of days spelling was taught.

Conversely, the percentages of normal students increased consistently from 17 where spelling was taught only 1 day per week to 30 where spelling was taught 5 days per week. Percentages of accelerated cases were

fairly constant, regardless of the number of days a week spelling was taught. Thus, it was necessary to draw the conclusion that an increase in the number of days spelling is taught each week is associated not only with a minimum of retardation but also with a maximum of normally developed students in spelling ability as measured by tests.

Length of spelling period in minutes.—The number of minutes devoted to the spelling period ranged from 5 to more than 40. About 1 in 3 persons had been receiving a 20-minute period of instruction, while about 1 in 5 persons had a 30-minute period and almost 1 in 4 a 15-minute period. One of the most surprising features of the whole study appeared in this item, when it was disclosed that 1 per cent of the total cases had only a 5-minute spelling period, and of these students only 42 per cent were retarded, while 25 per cent were normal and 33 per cent were accelerated. This was the best showing of any group of students in the study, when classified according to the length of spelling period. Aside from the 5-minute period, spelling ability was best when the spelling period was 20 minutes in length, and, as the number of minutes was both decreased and increased, there was a tendency toward poorer testing achievement. It should be mentioned, however, that those who were subjected to a spelling period of more than 40 minutes showed 31 per cent acceleration, which was the second best percentage under that category.

Time of day spelling is taught.—A glance at the percentages of students who had their spelling lessons in each of the four quadrants into which the school day was divided in this study showed that there was evidently no particular tendency to teach spelling at any specific time of day. Although there were some slight differences in the percentages of retarded, normal, and accelerated cases when the subject was taught at various times of the day, these percentage differences did not appear to be highly significant or important. One thing of interest stands out, however, and that is that the highest percentage of retardation and the lowest percentage of both normal and accelerated students were found when the time for teaching spelling varied from day to day.

Type of spelling unit.—Many types of spelling units were reported by the teachers who transmitted the data, but 97 per cent of the total cases either had a daily or weekly spelling unit, or data were unreported on this item. The daily unit appeared to have some advantage over the weekly unit as far as tested ability was concerned. This is evidenced by the fact that 42 per cent under the daily unit as opposed to 46 per cent under the weekly unit were retarded, 29 per cent against 27 per cent were normal, and 29 per cent against 27 per cent were accelerated. Other types of units collectively presented a still more undesirable picture, with 49 per cent retarded and only 23 per cent normal.

The way spelling appears in the curriculum.—About 81 per cent of the cases in this study, coming from 83 per cent of the units involved, were listed as having spelling as a separate subject. Also, an examination of retarded, normal, and accelerated percentages showed that, when spelling was taught as a separate subject, the tested spelling ability equalled or exceeded that when spelling was taught with any or all other subjects. There is

little choice between the results when spelling was taught as a separate subject and when it was taught with language arts or with other subjects except English. Spelling taught with English showed the highest percentage of retardation and the lowest percentage of normality in tested results. This certainly appears to be a significant fact which would indicate need for some further investigation. It may be, however, that spelling is taught with English only at the upper grade levels which are under consideration in this report. Since the percentage of retardation increases in the upper grades, no generalization can be made concerning this finding until a chance to re-examine the data is afforded.

Subject preceding spelling lesson.—About 1 in 3 students had the spelling lesson following either the reading lesson or some other language arts lesson. When this was the case, there was only about 43 per cent retardation in tested spelling ability, which was the best showing in this aspect of the study. When mathematics or other subjects preceded the spelling lesson, the percentage of retardation was slightly more. The highest percentage of retardation appeared when social studies preceded the spelling lesson. In all instances percentages of retardation, acceleration, and normality did not appear to differ importantly from the percentages for totals in each of these three categories.

Summary.—When tested spelling achievement was studied in relation to various specific factors in administrational procedure, there were some results which appeared to be significant and worthy of future investigation. We may summarize Table IV by saying that: (a) Tested spelling ability is best when spelling is taught 5 days per week; (b) the 5- and 20-minute spelling class periods appear to give best results; (c) there is no particular advantage for spelling to be taught in any particular part of the day, but the spelling period should be held constant; (d) there appears to be some advantage in the daily unit over other types of units; (e) there is a slight advantage when spelling is taught as a separate subject; and (f) tested spelling ability is best when reading or language arts precedes the spelling period, and worst when social studies precedes the spelling period.

Results in Relation to Various Emphases in Teaching Procedure

On the transmittal sheet for spelling results the teachers were asked to check their practices in various aspects of teaching procedure. These included use of pretests, amount of spelling checked in written work, use of progress charts, emphasis on rules, emphasis on reviews, and emphasis on phonetics. Table V shows the distribution of retarded, normal, and accelerated students in tested spelling ability, classified according to these various emphases in teaching procedure.

Use of pretests.—Approximately 58 per cent of the students reported in this study were subjected to pretests as a teaching device, 27 per cent had not been given pretests, and data were not reported for 15 per cent. Those who had pretests showed 45 per cent retardation as opposed to 47 per cent for those who had not had pretests, 27 per cent normality as opposed to 26 per cent for those who had not had pretests, and 28 per cent acceleration as opposed to 27 per cent for those who had not had pretests.

TABLE V. RETARDED, NORMAL, AND ACCELERATED PUPILS IN TESTED SPELLING ABILITY, CLASSIFIED ACCORDING TO VARIOUS EMPHASES IN TEACHING PROCEDURE

Item	Units reporting		Retarded		Normal		Accelerated		Total	
	Number	Per cent of all units	Number	Per cent of category	Number	Per cent of category	Number	Per cent of category	Number	Per cent of total cases
EMPHASIS ON USE OF PRETEST										
Yes	4,375	57	26,742	45	16,037	27	16,630	28	59,409	58
No	2,136	28	12,512	47	7,098	26	7,270	27	26,874	27
Data not reported	1,170	15	7,215	47	3,968	25	4,281	28	15,464	15
EMPHASIS ON AMOUNT OF SPELLING CHECKED IN WRITTEN WORK										
All written work	4,452	58	23,719	43	15,974	29	16,032	29	55,625	55
Some written work	2,387	31	17,093	49	8,551	25	9,180	26	34,824	34
No written work	87	1	364	48	215	29	172	23	741	1
Data not reported	785	10	5,303	50	2,407	23	2,797	27	10,587	10
EMPHASIS ON USE OF PROGRESS CHARTS										
Yes	2,306	30	14,294	44	9,175	28	9,141	28	32,610	32
No	3,977	52	23,823	46	13,456	26	14,168	28	51,447	51
Data not reported	1,370	18	8,302	47	4,466	25	4,972	28	17,690	17
EMPHASIS ON RULES										
No rules	189	2	1,219	50	640	26	576	24	2,435	2
General rules	1,913	25	11,167	46	6,804	28	6,695	28	24,064	24
Rule only as they apply	3,544	46	22,000	45	13,118	27	13,385	28	48,503	48
Few rules	409	5	2,384	46	1,421	27	1,384	27	5,189	5
Many rules	279	4	1,373	28	1,007	28	1,197	34	3,577	3
Data not reported	1,347	18	8,326	46	4,707	26	4,944	28	17,979	18
EMPHASIS ON SYSTEMATIC REVIEWS										
Yes	4,645	60	28,722	45	16,855	27	18,068	28	63,645	63
No	302	5	2,156	49	1,145	26	1,129	25	4,430	4
Some, but not systematized	1,846	24	10,354	45	6,595	28	6,168	27	23,117	23
Data not reported	808	11	5,237	49	2,502	24	2,816	27	10,555	10
EMPHASIS ON PHONETICS										
Heavily stressed	1,104	14	5,457	37	4,739	32	4,590	31	14,786	14
Moderately stressed	3,854	50	22,387	44	14,386	28	13,958	28	50,673	50
Not stressed at all	768	10	4,003	54	1,984	22	2,197	24	8,984	8
Data not reported	1,956	26	13,862	51	6,016	22	7,436	27	27,304	27
TOTAL	7,631	100	46,469	46	27,097	26	28,181	28	101,747	100

The differences exhibited here were not large enough to be of much importance, but the trend would appear to be in favor of those who were pretested.

Emphasis on amount of spelling checked.—Somewhat more than 55 per cent of the students in this study had spelling checked in all written work, and 34 per cent had spelling checked in some written work. Only 1 per cent were reported as having spelling checked in no written work. A decided advantage in tested spelling ability would appear to be associated with the fact that spelling was checked in all written work. This practice indicated a 6 per cent reduction in retardation, and a 3 per cent increase in both normal and accelerated cases over the results for those who had had only some of the written work checked. The number of cases in which no written work had been checked was too small to validate a general conclusion. But, if the students in this category were a legitimate sampling, it would appear that checking some of the written work is very little better than checking no written work, but that checking all written work leads to better tested spelling ability.

Emphasis on use of progress charts.—About 32 per cent of the students reported in this study were motivated by progress charts in all regular spelling work, while 51 per cent were not subjected to this device. The differences in percentages of retarded students and normal students in this aspect were in favor of the practice of using the charts, but the differences were not large enough to be considered of much importance. There was no

difference between percentages of accelerated students when progress charts were used and when they were not used.

Emphasis on rules.—If the cases in this study may be considered representative of practices in the township schools of Indiana, it would appear that by far the largest percentage of spelling students learn rules only as they apply. Another sizable number, about 1 in 4, have only general rules emphasized. Percentages of students who have many rules, or few rules, or no rules emphasized in the spelling lesson were comparatively small, but were still large enough to constitute an important sampling as far as number of cases was concerned.

The lowest percentage of retardation (38 per cent) appeared when many rules were emphasized. The percentages of retardation were about the same under an emphasis on general rules, on rules only as they apply, and on few rules. The greatest amount of retardation appeared when no rules had been emphasized. Percentages of normal students showed very little fluctuation under any aspects of emphasis on rules. Except for emphasis on no rules and emphasis on many rules, there was very little difference in percentages of accelerated students under any of the other aspects of emphasis on rules. If these data constitute a significant sampling, it would appear that the emphasis on many rules leads to considerably less retardation and considerably more acceleration in tested spelling ability than do lesser amounts of emphasis in this respect. By far the poorest tested spelling achievement is associated with emphasis on no rules.

Emphasis on systematic reviews.—About 2 in 3 students were reported as having studied spelling under a procedure which included systematic reviews. Almost 1 in 4 were reported as having had some reviews, but not as having had systematized reviews. Only 4 per cent of the total cases had had no systematic reviews. The data would appear to indicate that only minor differences occur when students are given systematic reviews and when they are not, but students receiving review of any kind show superior tested ability over those not having any reviews.

Emphasis on phonetics.—About 1 in 2 students had been subjected to a moderate stress on phonetics; about 14 per cent, or nearly 15,000 cases, were listed as having phonetics heavily stressed; and about 9 per cent, or nearly 9,000 cases, had not had phonetics stressed at all. Also, a very large percentage of the cases did not have this item checked. In no other aspect of the study did the differences in retarded, normal, and accelerated percentages appear to be as widely distributed and as important as in this particular aspect. Where phonetics had been heavily stressed there was only 37 per cent retardation, compared with 44 per cent when phonetics was moderately stressed and 54 per cent when not stressed at all. When phonetics was heavily stressed the percentage of normal cases was 32, as compared to 28 per cent when moderately stressed and only 22 per cent when not stressed at all. When pronetics was heavily stressed the accelerated cases totaled 31 per cent, compared to 28 per cent when phonetics was moderately stressed and only 24 per cent when not stressed at all. It could be pointed out that these data might be somewhat biased if the stress on phonetics is more universal in the lower grade levels than in the upper grade levels, since the percentages of retarded cases are much higher at the upper levels

than at the lower. It would appear, then, that there is need for breaking down these data by grade levels as a method of further investigation. This procedure will be attempted in a subsequent study.

Summary.—Again it should be pointed out that data such as these, in a study of wholesale fashion, may be subject to many biasing factors difficult to control. In most cases it is probably not too valid to generalize beyond pointing out the associative aspects of the emphases in teaching procedure and tested spelling ability. Statistically reliable but apparently not too important advantages appear to be associated with the use of pretests as a spelling procedure, the use of progress charts, and an emphasis on some kind of reviews. Emphasizing many rules is definitely associated with better tested achievement in spelling, while lack of employing rules is definitely associated with poor tested achievement. Checking spelling in all written work appears to bear a high relationship with better achievement, while apparently there is little advantage in checking some of the written work over checking no written work. The best tested spelling achievement was definitely associated with a heavy stress on phonetics, while the poorest tested ability appeared for those when phonetics was not stressed at all.

FINAL SUMMARY AND CONCLUSIONS

The 1944-1945 Indiana State Testing Program had as its principal project the testing of spelling in all grades, from 2 to 12, in all public and parochial schools in the state. Participation in the project was voluntary, a policy long established in state testing. No state testing project has been accepted with more interest and enthusiasm. Approximately 275,000 students were tested, which gave a sampling large enough practically to assure validity of results insofar as tested spelling ability is indicative of actual achievement.

The present study reports the results for 107,747 students coming from 7,681 teaching units in the township schools, and includes results for those students in grades 2 to 8. A previous study covered the same grade levels for city school students, and a subsequent study will be devoted to the results in grades 9 to 12 in both city and township schools.

The test used was the Stanford Achievement Test Spelling List, Form H. Various levels of the test were employed, as stipulated, for the various grades. The tenth, eleventh, and twelfth grades were given the ninth grade test, since no form was published for these upper levels. Testing, grading, and transmittal of results were the responsibility of the individual teachers, under the supervision of superintendents and principals. Tabulation and analysis of data were the responsibility of the Division of Research and Field Services of the School of Education of Indiana University.

The spelling list was administered on February 9, 1945. It has taken more than a year to complete the tabulation and to analyze the results.

In general, three types of students were considered in studying the results: retarded, normal, and accelerated. The criterion for a normal student required that his grade equivalent should not show more than .4 grade above or below his normally expected grade equivalent at the time of testing. Those whose grade equivalents fell below these limits were regarded as retarded, those above as accelerated. This rigidity in range of the criterion

for normality represents a policy of examining the data from a standpoint of what might be most ideal and desirable, and certainly does not invalidate the methods of study.

Before attempting generalizations and conclusions from the type of data represented in this report, it is necessary to consider carefully the subjectiveness and lack of precision which may be biasing factors in some of the results. This applies particularly to the items of data obtained by check list. One does not question the integrity of teachers in checking the various items, but one might question whether or not any group of teachers working independently would attach a universality of interpretation to many of the items in the list. In the case of some of these items, such as *use of pretest* or *use of progress charts,* there would be comparatively little doubt concerning the objectivity of the data. However, other items such as *stress on phonetics* or *emphasis on rules* would probably suffer from a lack of agreement in interpretation. Results in these aspects of the study should probably be construed as indicative of points of departure in future more highly controlled experimental procedure, rather than conclusive of causal relationships inherent in the present data. With this note of caution, the following pertinent conclusions appear to be suggested by the study.

1. Except for the 2B level, the average grade equivalent for each of the grade levels included in this report fail to equal or exceed the test norm at the time of testing. The average pupil deviation for all cases in this study is about .6 grade below the norm. These grade level average pupil deviations range from +.1 grade for 2B's to −1.1 grades for 8A's. In general, increasing subnormal deviation is associated with increasing grade level.

2. About 46 per cent of the Indiana township students are retarded in tested spelling ability; only 26 per cent are normal; and 28 per cent are accelerated. On the average the retarded pupils test about 1.5 grades below the norm, and accelerated students are about 1.6 grades above the norm. As a general trend, the percentages of retarded cases tend to increase at the higher grade levels and the percentages of normal students tend to decrease; the percentages of acceleration fail to follow any constant trend.

3. The learning curves for spelling tend to approximate a straight line for the total group and for the retarded group, but to take the shape of the typical concave-convex curve in the case of accelerated students. However, these straight lines show varying slopes away from the normal line.

4. Spelling ability as measured by tests appears to be influenced very little by such general factors as (a) number of students per unit, (b) number of students enrolled in the school, (c) organization of grades within the school, (d) length of the school year, and (e) type of commission held by the school. There is some evidence of superior tested ability in the case of units of fewer than 20 students, and of inferior tested ability when students are enrolled in schools where the total enrollment is 450 or more.

5. Tested spelling ability is best when spelling is taught 5 days a week.

6. The 20-minute period appears to be associated with best tested ability.

7. Although there is no particular advantage in any time of day for the spelling period, the best results occur when the time of the spelling period is held constant.

8. The daily unit has some advantage over other types of units.

9. Tested spelling ability is best when reading or language arts precedes the spelling period and worst when social studies precedes the spelling period.

10. Differences in tested spelling ability appear to favor the use of pretests, the use of progress charts, and an emphasis on some kind of reviews, but these differences do not seem important.

11. Emphasizing many rules, checking spelling in all written work, and heavily stressing phonetics are definitely associated with better spelling achievement as measured by tests.

APPENDIX

List of Participating School Systems

Adams

Brandyberry
DeBolt
Election
(Kirkland Twp.)
Election
(Monroe Twp.)
Ewen
Geneva
Hartford
Hower
Jefferson Twp.
Kimsey
Kirkland Twp.
Lincoln
Linn Grove
Lucky
Magley
Meyer
Monmouth
Monroe Twp.
Muensterburg
Pleasant Mills
Preble
Reynolds
Sackett
Schnepp
Sprunger
Winchester

Allen

Hillcrest
Madison Twp.

Bartholomew

Azalia
Burnsville
Central
Clifford
Clifty
Conner
Dettmer
East Columbus
Elizabethtown
German Twp.
Grammar
Hartsville
Hawcreek Twp.
Jonesville
Kobbe
Lawlis
Lowell
Mt. Pleasant
Newbern
Petersville
St. Louis Crossing
South Bethany
Sprague
Sweet Ireland
Wagner
Walesboro
Waymansville
Wright

Benton

Ambia
Bolivar Twp.
Boswell
Earl Park
Fowler
Gilboa Twp.
Oxford
Parish Grove Twp.
Pine Twp.
York Twp.

Boone

Advance
Buntin
Center
Center No. 1
Center Ridge
Dover
Eagle Twp.
Elizaville
Hoosewell
Jamestown
Julius Pinnell
Lindberg
Perry Central
Terhune
Thorntown
Union Twp.
Washington Twp.
Whitestown

Carroll

Adams Twp.
Burlington
Burrows
Camden
Carrollton Twp.
Carson
Cutler
Deer Creek
Monroe Twp.
New Hope
North Central
Pittsburgh
Rockfield
Yeoman

Cass

Clymers
Deacon
Galveston
Jefferson Twp.
Lincoln Consolidated
Lucerne
Metea
New Waverly
Noble Twp.
Onward
Royal Center
Twelve Mile
Walton
Washington Twp.
Young America

Clarke

New Washington

Clay

Carrithers
Coalmont
Hadleytown
Harrison Twp.
Howesville
Martz
Perry Twp.
Perth
Poland
Roadman
Saline City
Stunkard
Sugar Ridge Twp.
Van Buren Twp.
Washington Twp.
Weaver

Clinton

Beard
Colfax
Forest Twp.
Jackson Twp.
Kilmore
Kirklin
Michigantown
Middlefork
Mulberry
Owen Twp.
Rossville
Scircleville
Scroggy
Sugar Creek Twp.
Washington Twp.

Crawford

Allstott
Alton
Anderson City
Central
Conner
Cross Roads
Cunningham
Dillman
Eckerty
Fredonia
Grantsburg
Jericho (Ohio Twp.)
Jericho (Patoka Twp.)
Lankford
Leavenworth
Magnolia
Mt. Sterling
Myers
Oak Hill
Pedora
Riceville
Riddle
Rock Springs
Sunshine
Taswell
West Fork
Wickliffe
Wiseman

Daviess

Alfordsville
Barr Twp.
Cannelburg
Corning
Elmore Twp.
Epsom
Glendale
Hopkins
Jefferson
Lasca
Lett
Livers
Longfellow Consolidated
Park
Parsons
Plainville
Raglesville
Sugarland
Williams

Dearborn

Dillsboro
Guilford
Homestead
Lawrenceville
Manchester
Moores Hill

Dearborn (cont.)
Plum Point
Weisburg
Wilmington
Wrights Corner

Decatur
Adams
Burney
Clarksburg
Degenhart
Hamburg
Jackson Twp.
Lehman
Letts
New Point
St. Paul
Sandusky
Smyrna
Westport
Wood

DeKalb
A'tona
Ashley
Bog Island
Butler Center
Center
Concord Twp.
Corunna
East Keyser
East Richland
Fairfield Twp.
Franklin Center
Hogue
Hopewell (Jackson Twp.)
Hopewell (Wilmington Twp.)
Jackson Center
Jerusalem
Lyons
Magginis
Moores
Mudsock
Newville
North Keyser
Pyles
St. Johns
Schopf
Shugars
Spencerville
Tamarack
Taylors Corners
West Richland

Delaware
Daleville
Eugene Field
Gaston
Harrison Twp.
Royerton

Dubois
Ackerman
Bender
Bockelman
Breitwieser
Bretzville
Chanley
Crystal
Cuzco
Dick
Dubois
Duff
Ferdinand
Grassy Fork
Haas
Harbison Twp.
Haysville
Hillham
Holland
Hope

Dubois (cont.)
Horney
Ireland High
Jefferson Twp.
John
Kellerville
Kyana
Merkle
Miley
New Antioch
Portersville
Pruitt
Rose Bank
Seger
Warnsman

Elkhart
Bashor
Benton
Bristol
Brown
Center
Clinton Community
Concord Departmental Grade
Culp
Dells
East Side
Good
Harrison Center
Hex
Jefferson Twp.
Jones
Juday
Kurtz
Locke
Locke Center
Millersburg
Model
Morningstar
New Paris
Nihart
Osolo Twp.
Rensberger
Sanitary
Shriver
Southwest
Stryker
Stump
Swoveland
Vistula
Wahl
Wakarusa
Waterford Grade
Weldy
Wilson
York Center

Fayette
Alquina
Bentonville
Bunker Hill
Columbia
Everton
Fairview
Garrison Creek
Harrisburg
Nulltown
Orange
Waterloo

Fountain
Cates
Coal Creek
Davis Twp.
Fountain
Hillsboro
Kingman
Logan Twp.
Rabb
Richland Twp. High
Rob Roy
Sterling
Stone Bluff

Fulton
Akron Elementary
Burton
Delong
Grass Creek
Kewanna
Leiters Ford
Reiter
Richland Center
Talma
Woodrow

Gibson
Baldwin Heights
Haubstadt
Mackey
Owensville

Grant
Antioch
Bethel
East Converse
Fairmont and Fairmont Twp.
Fowlerton
Green Twp. Consolidated
Hendricks
Landess
Mier
North Grove
Oak Ridge
Radley
Swayzee
Sweetser
Upland-Matthews

Greene
Solsberry Elementary
Solsberry Junior High

Hamilton
Atlanta Elementary
Bethlehem
Carmel Joint
Cicero Elementary
Clay Center
Cyntheann
Durbin
Federal Hill
Sheridan
Walnut Grove
Westfield
Wheeler

Hancock
Brandywine Twp
Charlottesville
Eden
Fortville
McCordsville
Maxwell
Mt. Comfort
New Palestine
Shirley
Westland
Wilkinson

Harrison
New Amsterdam

Hendricks
Amo Elementary
Belleville
Brownsburg
Cartersburg
Clayton
Coatesville
Hazelwood
Plainfield Elementary
Stilesville

Henry

Ashland
Blountsville
Cadiz
Central
Greensboro
Honey Creek
James Whitcomb Riley
Kennard
Lewisville
Mechanicsburg
Millville
Mooreland
Mt. Summit
New Lisbon
Raysville
Spiceland
Springport
Straughn
Sugar Grove
Sulphur Springs
Westwood

Howard

Alto
Center
Clay Twp.
Darrough
Ervin Twp.
Greentown
Hemlock
Howard Twp.
Jackson Twp.
New London
Oakford
Russiaville
Union Twp.
Wallace
West Middleton

Huntington

Clear Creek Twp.
Dallas Twp.
Huntington Twp.
Jackson Twp.
Jefferson Twp.
Lancaster Twp.
Markle
Polk Twp.
Rock Creek Center
Salamonie Twp.
Union Twp.
Warren Twp.
Wayne Twp.

Jackson

Tampico

Jasper

Fair Oaks
Gillam Consolidated
Hanging Grove
Kankakee Twp.
Keener Twp.
Kniman
Newland
North Newton
Parr
Remington
South Barkley
South Marion
South Newton
Wheatfield

Jay

Bluff Point
Boundary
Bryant
Center
College Corner
Gibson
Greenhill

Jay (cont.)

Hanlin
Jefferson Twp.
Madison Twp.
Miller
New Corydon
Pennville
Poling
Swamp Hollow
Union
Walnut Corner
Willow Chapel

Jefferson

Deputy
Dupont
Saluda

Jennings

Bear Creek
Brewersville
Butlerville
Hayden
Lovett Twp.
Marion Twp.
Paris Crossing
St. Ann
San Jacinto
Scipio
Vernon
Walnut Grove
Zenas

Johnson

Center Grove
Clark
Franklin Twp.
Needham
Nineveh
Trafalgar
Union Twp.
Whiteland

Knox

Aliceville
Brick
Bruceville
Decker
Decker Chapel
Edwardsport
Freelandville
Frichton
Monroe City
No. 1 (Vincennes Twp.)
No. 2 (Vincennes Twp.)
No. 3 (Vincennes Twp.)
Oaktown
Orrville
Purcell
Sandborn
Westphalia
Wheatland

Kosciusko

Atwood
Beaver Dam
Burket
Claypool
Franklin
Leesburg
Milford
Monroe Consolidated
North Webster
Pierceton
Sidney
Silver Lake
Syracuse

Lagrange

Bloomfield
Brighton
Brushy Prairie

Lagrange (cont.)

Eden Twp.
Farver
Green
Hoff
Lima Twp.
Pashan
Poynter
Sand Hill
Saylor
Scott
Shipshewana
South Milford
Springfield Twp.
Stroh
Taylor
Topeka
Walnut
Wolcottville
Wortinger
Yoder

Lake

Ainsworth
Black Oak
Calumet Twp.
Cedar Lake
Center
Highland
Hosford Park
Lake Prairie
Leroy
Lincoln
Lowell
Merrillville
New Chicago
Oakland
Palmer
Ridge
Riley (Center Twp.)
St. John's Twp.
Schererville
Schiller
Schneider
Shelby
Sheridan
Washington (Center Twp.)
Winfield

La Porte

Center
Clinton Twp.
Coolspring
Door Village
Galena Central
Hanna
Johnson Road
Kingsbury
Kingsford Heights
LaCrosse
Lakeland
Lakeview
Long Beach
Mill Creek
Roeske
Rolling Prairie
Sauktown
Springfield Central
Stillwell
Stites
Tenth Street
Union Mills
Union Twp.
Wanatah
Westville
Willvale

Lawrence

Bryantsville
Burris Consolidated
Dive
East Oolitic
Englewood

Lawrence (cont.)
Fayetteville
Ft. Ritner
Heltonville
Huron
Lawrenceport
Marshall Twp.
Oolitic
Shawswick Twp.
Springville
Tunnelton

Madison
Center
College Corner
Fall Creek Heights
Forest Hills
Franklin
Frankton
Ingalls
Leach
Lindberg
Linwood
Markleville
Perkinsville
Red Corner
Roosevelt
South Elwood
Townsend
Union

Marion
Ben Davis Elementary
Bluff Avenue No. 9
Bridgeport
Clermont
Cumberland
Flackville
Fleming Garden
Garden City
Lawrence Grade
Lowell
Mars Hill
Pleasant Run
Shadeland
Township House
University Heights

Marshall
Argos
Borkholder
Bourbon
Bremen
Burlington
Culver
Green Twp.
Inwood
Lapaz
Tesgarden
Tippecanoe
Tyner
Walnut Twp.
West Twp.

Miami
Allen Twp.
Bunker Hill
Butler Twp.
Chili
Deedsville
Denver
Erie Twp.
Gilead
Liberty
Miami
Nead Consolidated
North Grove
Ridgeview
Victory

Monroe
Allens Creek
Arlington
Broadview
Burgoon
Butcher
Chapel Hill
Clay
Clear Creek
Consolidated
Cross Roads
Dolan
Ellettsville
Finley
Fleener
Handy
Harmony
Harrodsburg
Headley
Hanscnburg
Hillside
Honeycreek
Hunters Creek
Joint
Kirksville
Knight Ridge
Lampkins
Parks
Payne
Percifield
Phillips
Poplar Grove
Rice
Sanders
Smithville Elementary
Snoddy
South Union
Stanford
Stinesville
Todd
Unionville
Vernal
Waterworks

Montgomery
Bowers
Brooks
Darlington
Ladoga
Linden
Mace
Mt. Zion
New Market Joint
New Richmond
New Ross
Ripley Twp.
Smartsburgh
Waveland
Waynetown
Whitesville
Wingate
Youngs Chapel

Morgan
Brooklyn
Centerton
Eminence
Green Twp. Consolidated
Hall
Monrovia
Morgantown
Mt. Olive
Paragon
Wakeland
Walnut Grove
Waverly
Wilbur

Newton
Morocco

Noble
Albion
Avilla
Green
Jefferson Center
Kimmell
LaOtto
Merriam
North Elkhart
Perry
Rehoboth
Rome City
Stanley
Sugar Grove
Sweet
Washington Center
Wawaka
Wayne Center
Wolf Lake
York Center
Zion

Owen
Asher
Braysville
Carp
Cataract
Consolidated
Crisp
Cuba
Freedom
Gross
Jefferson Twp.
Loposssa
Marion Twp.
Morgan-Jackson Twps.
Mt. Zion
Quincy
Splinter Ridge
Vandalia
Wayne Twp.

Parke
Bloomingdale
Bridgeton
Byron
Goodin's Corner
Grange Corner
Greene Twp.
Judson
Lena
Liberty Twp.
Mansfield
Marshall
Mecca
Reserve Twp.
Rosedale
Roseville
Union Twp.
Vivalia

Perry
Apalona
Aydeville
Branchville
Bristow
Derby
Dexter
Howell (Anderson Twp.)
Howell (Union Twp.)
Kitterman
Leopold
Millstone
Mt. Gilead
Oil Twp.
Oriole
Rome
St. Croix
The's
Tobinsport
Troy
Troy Twp. Consolidated

Pike

Algiers
Arthur
Ayrshire
Muren
Pikeville
Simtown
Slickum
Stendal
Velpen

Porter

Bayles
Beverly
Boone Grove
Carver
Chesterton Elementary
Cook's Corners
Flint Lake
Garyton
Hayes-Leonard
Hebron
Jackson Twp.
Kouts
Liberty Center
Morgan Twp.
Pines
Portage Twp.
Porter
Union Center
Washington Twp.
Wheeler

Posey

Bethel Twp.
Black
Blairsville
Caborn
Cronbach
Cynthiana
Farmersville
Grafton
Hartman
Huber
Jeffries
Lawrence (Marrs Twp.)
Lawrence (Point Twp.)
Martin
Parker
Poseyville
Schroeder
Smith
Springfield
Stucky
Thompson
Upton
Wadesville
Walker
Waterman
West Franklin

Pulaski

Beardstown
Brush College
Center (Beaver Twp.)
Center (Cass Twp.)
Center (Jefferson Twp.)
Center (Monroe Twp.)
Center (Rich Grove Twp.)
Denham
Fairview
Francesville
Lizenby
Medaryville
Mohler
Monterey
Moose
Oak Palace
Pulaski
Ripley
Star City
Sunnyside

Pulaski (cont.)

Union
Walters
White Post

Putnam

Clinton Center
Fillmore
Russell Twp.

Randolph

Huntsville
Jackson Twp.
Lincoln
McKinley
Modoc
Wayne Twp.

Ripley

Elrod
Milan
Smith
Spades
Terry

Rush

Glenwood
Ging
Jackson
Manilla
Mays
Milroy
Moscow
New Salem
Raleigh

St. Joseph

Centre Twp.
Harris Twp.
Madison Twp.
North Liberty
Wagner

Spencer

Cutler Consolidated
Eureka
Evanston
Gentryville
Gilmore
Hatfield
Lamar
Lippert
New Boston
Richland
Silverdale
South Central

Starke

California Twp.
Eagle Creek
English Lake
Geddes
Jordan
North Bend
Oregon Twp.
Ober
Ora
San Pierre
Winona

Steuben

Flint
Fremont
Hamilton
Metz
Orland
Pleasant Lake
Scott Center

Sullivan

Cass
Central Building
East Ward
Farmersburg
Graysville
Hymera
Merom
New Lebanon
Pleasantville
Union High School
West Ward

Tippecanoe

Battle Ground
Buck Creek
Clark's Hill
Colburn
Crouch
Dayton
Elston
Jackson Twp.
Klondike
Monitor
Romney
Shadeland
Shelby Twp.
Stockwell
Wea Twp.
West Point

Tipton

Beech Grove
Clay
Curtisville
Goldsmith
Hobbs
Jackson
Kempton
Prairie Twp.
Sharpsville
Windfall

Union

Billingsville
Harrison Twp.
Union Twp.

Vanderburgh

Armstrong Twp.
Barker
Burkhardt
Caze
Haas No. 6
Harper
Harwood
Hebron
Highland
Kasson No. 8
Lodge
Lyle
Lynch
McCutchanville
Mayer
Perry Heights
Rheinlander
Scott Twp. Elementary
Stringtown
Tekoppel
Vogel
West Heights
White

Vermillion

Cayuga
Crompton Hill
Dana
Eugene
Fairview
Hillsdale
Jacksonville
Newport Elementary

Vermillion (cont.)
Perrysburg
Rileysburg
St. Bernice
Universal

Wabash
Chester Twp.
Chippewa
LaFontaine
Lagro
Laketon
Liberty Mills
Lincolnville
Linlawn
New Salem
Roann
Servia
Urbana
Waltz Twp.

Warren
Foster
Green Hill
Hedrick
Independence
Judyville
Kramer
Locust Grove
Marshfield
Pence
Pine Village
Rainsville
State Line
Tab
West Lebanon
Winthrop

Warrick
Ashby
Chandler
DeGonia
Elberfeld
Folsomville
Millersburg
Newburgh
Newburgh (Col.)
New Hope
Pelzer
Pleasant Hill
Tennyson
Turpin
Yankeetown

Washington
Canton
Ebenezer
Fredericksburg
Gibson Twp.
Kansas
Livonia
Martinsburg
Monroe
New Philadelphia
Pierce Twp.
Polk Twp.
Walnut Grove

Wells
Chester Center
Jackson Twp.
Lancaster Central
Liberty Center
Ossian

Wells (cont.)
Petroleum
Poplar Grove
Rockcreek Center
Union Center
Vera Cruz

White
Bell Center
Buffalo
Burnettsville
Chalmers
Good Hope
Idaville
Meadow Lake
Monon
Prairie Twp.
Reynolds
Round Grove
Sitka
Springdale
Wolcott

Whitley
Cleveland Twp.
Churubusco
Coesse
Collins
Columbia Consolidated
Etna Twp.
Jefferson Center
Larwill
Thorncreek Center
Troy Center
Washington Center

Bulletins in the Field of Education, Indiana University

The Bulletin of the School of Education, Indiana University, was first published in 1924 and has appeared regularly since that time. Research studies of interest to educators, proceedings of conferences held, and bibliographies of educational materials have been the principal fields touched upon in these bulletins. A complete list of the bulletins may be obtained from the School of Education upon request. The studies included in the present volume and in the two volumes immediately preceding it in date are listed below. Unless otherwise noted, these may be obtained for 50 cents each from the Indiana University Bookstore, Bloomington, Indiana.

One Hundred Fifty Years of Arithmetic Textbooks. By Henry Lester Smith, Merrill T. Eaton, and Kathleen Dugdale. Vol. XXI, No. 1, 1945. 153 p.

Bibliography of School Buildings, Grounds, and Equipment, Part V. By Henry Lester Smith and Harold E. Moore. Vol. XXI, No. 2, 1945. 79 p.

School Library Personnel in Indiana. By Margaret I. Rufsvold. Vol. XXI, No. 3, 1945. 80 p.

Source Material Relating to the Development of Education in Indiana. By Velorus Martz and Henry Lester Smith. Vol. XXI, No. 4, 1945. 95 p.

Bibliography of School Buildings, Grounds, and Equipment, Part VI. By Henry Lester Smith and Harold E. Moore. Vol. XXI, No. 5, 1945. 73 p.

Analysis of the Proficiency in Silent Reading of 15,206 Sixth Grade Pupils in 648 Schools in Indiana. By Henry Lester Smith and Merrill T. Eaton. Vol. XXI, No. 6, 1945. 52 p.

Analysis of the Proficiency in Silent Reading of 11,424 Sophomore Pupils in 243 High Schools in Indiana. By Henry Lester Smith and Merrill T. Eaton. Vol. XXII, No. 1, 1946. 51 p.

Analysis of the Spelling Proficiency of 82,833 Pupils in Grades 2 to 8 in 3,547 Teaching Units of the City Schools of Indiana. By William H. Fox and Merrill T. Eaton. Vol. XXII, No. 2, 1946. 50 p.

Analytic Study of the Student Personnel of the School of Education, Indiana University, 1931-1942. By Henry Lester Smith and Oscar P. Rausch. Vol. XXII, No. 3, 1946. 31 p.

School Building Planning and Related Problems: Proceedings. Vol. XXII, No. 4, 1946. 83 p.

One Hundred Fifty Years of Grammar Textbooks. By Henry Lester Smith, Kathleen Dugdale, Beulah Faris Steele, and Robert Stewart McElhinney. Vol. XXII, Nos. 5 and 6, 1946. 199 p.

Spelling Proficiency in Township Schools in Indiana. By William H. Fox. Vol. XXIII, No. 1, 1947. 32 p.